

REMARKS

This Reply is in response to the Office Action mailed on February 8, 2005 in which Claims 18, 45 and 53 were objected and in which Claims 1-11, 14-17, 19-23, 29-38, 40-44, 46, 49-52, 54 and 57-59 were rejected. With this response, Claims 58 and 60 are cancelled; Claims 1, 9, 19, 22, 31, 40, 47, 49 and 59 are amended; and Claims 63-66 are added. Upon allowance of Claims 1, 22, 35 and 49, Applicants respectfully request reinstatement of withdrawn Claims 12-13, 24-28, 39, 47-48 and 55-56 which depend from such generic claims. Accordingly, Claims 1-57 and 59-66 are presented for reconsideration and allowance.

I. Rejection of Claim 60 Under 35 U.S.C. § 112.

Page 3 of the Office Action rejected Claim 60 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter of the invention. Claim 60 is cancelled, rendering the rejection moot.

II. Rejection of Claim 57 Under 35 U.S.C. § 102(b) Based Upon Smith.

Page 3 of the Office Action rejected Claim 57 under 35 U.S.C. § 102(b) as being anticipated by Smith, U.S. Patent No. 5,020,244. Based upon the following, Applicant respectfully requests that the rejection be withdrawn.

Claim 57 recites a controller configured to generate control signals directing the operation of a printing mechanism. Claim 57 further recites a pressurized air source creating an airflow such that the airflow is heated by heat emitted from the controller, wherein the pressurized air source is configured to direct the heated airflow against a print surface.

Smith fails to disclose a printing mechanism having a controller that generates control signals directing operation of a printing mechanism and wherein heat emitted from the controller is used to heat airflow that is directed against a print surface. In contrast, Smith merely discloses a heating element 30. No where does Smith disclose or even suggest that heating element 30 generates control signals directing the operation of a printing mechanism. The Office Action seems to assert

that Smith would inherently include a controller configured to generate control signals directing the operation of the printing mechanism. Even though this may be true, nowhere does Smith disclose that heat emitted from the controller is used to heat air that is subsequently directed at a print surface. Even assuming, arguendo, that such a “inherent” controller of Smith would generate control signals directing the operation of heating element 30, this in no way suggests heat emitted from the controller itself is used to heat air that is directed at the print surface. Thus, the Office Action’s rejection of Claim 57 based upon Smith is improper and should be withdrawn.

III. Rejection of Claims 1-5, 8-11, 14-17, 19, 22-23, 31, 34-38, 40-44, 46, 49-52, 54, 58-59 and 62 Under 35 U.S.C. § 103(a) Based Upon Smith.

Page 4 of the Office Action rejected Claims 1-5, 8-11, 14-17, 19, 22-23, 31, 34-38, 40-44, 46, 49-52, 54, 58-59 and 62 under 35 U.S.C. § 103(a) as being unpatentable over Smith, U.S. Patent No. 5,020,244.

A. Claims 1, 19, 22, 31, 35, 40, 49 and 59.

Claims 1, 19, 22, 31, 35, 40, 49 and 59 each recite a method or apparatus in which airflow is directed at a face of media, print surface or printing surface upon which print imaging is applied. The airflow is directed at the face prior to the surface or face of the media being contacted by a structure downstream of the printzone. As a result, the spacing between a printhead and the face of the media may be maintained “without requiring star-wheels or other output-side media hold-down devices that could damage the printed image.” (See p. 14, lines 5-8).

Smith fails to disclose or suggest a method or an apparatus in which an airflow is directed at a surface upon which a printed image is formed prior to the surface being contacted by a structure downstream of the printzone. In contrast, Smith discloses that the face of media 2 upon which the ink is deposited is subsequently contacted by star-wheel 10 prior to the same face being impinged by airflow through opening 26. Thus, Smith inherently results in the same problem that

has been identified and at least mitigated by the present application, namely, potential damage to a printed image by star-wheels or other output-side media hold-down devices. (See p. 14, lines 5-8). No where does Smith suggest that housing 14, blowers 18 or heating element 30 may alternatively be repositioned between printhead 4 and star-wheel 10. Accordingly, Claims 1, 19, 22, 31, 35, 40, 49 and 59, as amended, overcome the rejection based upon Smith. Claims 2-5, 8-11, 14-17, 23, 34, 36-38, 41-44, 46, 50-52, 54, 59 and 62 overcome the rejection for the same reasons.

B. Claim 8.

Claim 8 depends from Claim 1 and further recites that the airflow is provided from an elongate vent having a length dimension less than a width of the printzone.

Smith fails to disclose or suggest the method of Claim 1, wherein airflow is provided from an elongate vent having a length dimension less than a width of the printzone. In rejecting Claim 8, the Office Action refers to Figure 1, reference 32. However, with respect to Claim 4, the Office Action also asserts that Smith discloses an elongate vent having a length dimension substantially coincident with a width of the printzone. Smith appears to only disclose a single elongate vent. The single elongate vent disclosed by Smith cannot be both substantially coincident with a width of the printzone and less than a width of the printzone. Accordingly, Smith appears to fail to disclose the airflow provided by an elongate vent having a length dimension less than a width of the printzone. Thus, Claim 8 overcomes the rejection based upon Smith for this additional reason.

C. Claim 10.

Claim 10 depends from Claim 1 and recites that the airflow carries heat energy take from a heat source otherwise producing waste heat energy (intervening Claim 9) and that the waste heat energy originates from electronic control circuit components.

Smith fails to disclose waste heat energy originating from electronic control circuitry components being utilized to heat airflow that is directed at the printed upon surface. In contrast, Smith merely discloses heating element 30. Once again, no where does Smith disclose or even suggest that heating element 30 comprises electronic control circuit components. In rejecting Claim 10, the Office Action refers to Figure 6, reference 86 and column 5, lines 53-63 of Smith. However, the embodiment shown in Figure 6 still relies upon a heating element 30. In particular, Smith specifically states "a signal from the thermostat 82 is transmitted to a sensing and regulating logic 84, well known to those skilled in the art, which senses the temperature to regulate the power source 86, which in turn appropriately adjusts the energy and as a consequence, the temperature of heating element 30." (Col. 5, lines 50-55). No where does Smith disclose or suggest that waste heat energy from sensing and regulating logic 84 is used to heat the airflow of Smith. The assertion by the Office Action that the "claim naturally suggested" is erroneous and without support. Thus, Claim 10 overcomes the rejection for this additional reason.

D. Claim 11.

Claim 11 depends from Claim 1 and further recites that the airflow carries heat energy taken from a heat source otherwise producing waste heat energy (intervening Claim 9) and that the waste heat energy originates from motor components.

Smith fails to disclose a method wherein waste heat energy from motor components is used to heat airflow that is directed to a printed upon face of media. Once again, Smith specifically requires the use of a heating element 30. No where does Smith disclose or suggest that waste heat from its motor is used to heat the airflow of Smith. In rejecting Claim 11, the Office Action refers to column 5, lines 41-46 of Smith. However, such lines merely state that:

Motor 50, as shown in Fig. 4, is a small shaded pole motor with a shaft 52 speed of 3,000 rpm, which creates an impeller 18 with a velocity of 780-975 fpm, or 13-16 fps, resulting in air velocities lower than the impellers' 18

tip velocities (approximately 100 fpm, but nonetheless, high drying air velocity.

(Smith, col. 5, lines 41-46).

No where does this recited portion of Smith disclose or suggest that waste heat energy from the pole motor is used to heat the air being directed at the print surface by Smith. Accordingly, Claim 11 overcomes the rejection for this additional reason.

IV. Rejection of Claims 6-7, 20-21, 29-30 and 32-33 Under 35 U.S.C. § 103(a) Based Upon Smith and Martinengo.

Page 13 of the Office Action rejected Claims 6-7, 20-21, 29-30 and 32-33 under 35 U.S.C. § 103(a) as being unpatentable over Smith, U.S. Patent No. 5,020,244, in view of Martinengo, U.S. Patent No. 5,495,275. Claims 6-7, 20-21 and 32-33 depend from Claims 1, 19 and 31, respectively, and overcome the rejection based upon Smith in view of Martinengo for the same reasons discussed above with respect to Claims 1, 19 and 31. Claims 7, 21, 30 and 33 overcome the rejection based upon Smith and Martinengo for the following additional reasons.

Claims 7, 21, 30 and 33 recite that the resistive elements including electronic control circuit components serving to support operation of an inkjet printer also serve as a heat source for heating air that is directed at print media.

Neither Smith nor Martinengo, alone or in combination, disclose or suggest the use of electrically resistive elements of an electronic control circuit component as a heat source for heating air which is directed at printed upon media. In contrast, Smith merely discloses heating element 30. No where does Smith teach or suggest that heating element 30 comprises an electronic control circuitry component which supports operation of an inkjet printer.

Moreover, Martinengo also fails to disclose a list of elements which include electronic control circuit components serving to support operation of an inkjet printer. In rejecting such claims, the Office Action asserts that Martinengo discloses resistive

elements carrying electrical current and refers to column 6, lines 24-27 of Martinengo. However, column 6, lines 24-27 merely refer to a heating element of electrically resistive material disposed on a plate. Martinengo fails to disclose that such electrically resistive material is provided as part of or includes electronic control circuit components serving also to support operation of an inkjet printer. At most, the hypothetical combination of Smith and Martinengo would result in heating element 30 including the electrical resistive elements disclosed by Martinengo. The combination would not result in the sensing and regulating logic 84 of Smith being used to heat air serving as a heat source for heating air directed at media 2. Thus, Claims 7, 21, 30 and 33 overcome the rejection based on Smith and Martinengo for this additional reason.

V. Rejection of Claims 1-5, 8-11, 14-17, 19, 22-23, 31, 34-38, 40-44, 46, 49-52, 54, 58-59 and 61-62 Under 35 U.S.C. § 103(a) Based Upon Smith and Rezanka.

A. Claims 1, 19, 22, 31, 35, 40, 49 and 59.

Page 14 of the Office Action rejected Claims 1-5, 8-11, 14-17, 19, 22-23, 31, 34-38, 40-44, 46, 49-52, 54, 58-59 and 62 under 35 U.S.C. § 103(a) as being unpatentable over Smith, U.S. Patent No. 5,020,244, in view of Rezanka et al., U.S. Patent No. 5,371,531. With this response, Claims 1, 19, 22, 31, 35, 40, 49 and 59 are amended. Claims 1-5, 8-11, 14-17, 19, 22-23, 31, 34-38, 40-44, 46, 49-52, 54, 58-59 and 62, as amended, overcome the rejection based upon Smith and Rezanka.

Claims 1, 19, 22, 31, 35, 40, 49 and 59 each recite a method or apparatus in which airflow is directed at a face of media, print surface or printing surface upon which print imaging is applied. The airflow is directed at the face prior to the surface or face of the media being contacted by a structure downstream of the printzone. As a result, the spacing between a printhead and the face of the media may be maintained "without requiring star-wheels or other output-side media hold-down devices that could damage the printed image." (See p. 14, lines 5-8).

Neither Smith nor Rezanka, alone or in combination, disclose or suggest a method or an apparatus in which an airflow is directed at a surface upon which a printed image is formed prior to the surface being contacted by a structure downstream of the printzone. In contrast, Smith discloses star-wheel 10 which contacts the printed upon face of sheet 2 prior to the printed upon face being impinged by airflow through opening 26. Smith fails to provide any motivation or suggestion for alternatively positioning opening 26 or impeller 18 between star-wheel 10 and printhead 4.

Rezanka also fails to disclose directing airflow at a face or surface of media upon which a print image is formed prior to the face being contacted by a structure downstream of printzone. In contrast, Rezanka appears to achieve drying by using microwave cavities 52 and 54. No teaching or suggestion exists for Rezanka alternatively including the blower device shown in Smith.

Moreover, even assuming, arguendo, that it were obvious to modify Smith in view of the teachings of Rezanka, the hypothetical combination would still fail to result in a method or apparatus in which airflow is directed at a face of print media upon which imaging is formed prior to the face being contacted by a structure downstream of the printzone. In its rejection based upon Smith and Rezanka, the Office Action asserts that:

It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the platen, roller, guide support structure of Smith with the belt support structure of Rezanka et. al.

(Office Action dated February 8, 2005, p. 22)

Even assuming, arguendo, that the Examiner's assertion is correct, replacement of platen 6, roller 8 and guide 12 of Smith with belt 40 of Rezanka would still leave star-wheel 10 between printhead 4 of Smith and opening 26. Neither Rezanka nor Smith provide any suggestion or motivation for additionally omitting star-wheel 10 or relocating star-wheel 10. Rezanka does not appear to include a star-wheel or a hold-down device. However, this may be due to the fact

that Rezanka does not direct or force air against the Sheet which may otherwise undesirably move the Sheet. Rather, Rezanka employs microwave cavities 52 and 54 which are disclosed for drying the ink without directing or forcing air against the Sheet. In contrast, Smith appears to blow air along media 2. Smith specifically teaches that this requires star-wheel 10 to apply pressure to media 2 to maintain frictional contact of the media with drive roller 8. (See col. 2, lines 25-29).

Given such teachings in Smith, one of ordinary skill in the art, would be lead by Smith to include star-wheel 10 to maintain frictional contact of media 2 also with belt 40 if Smith were modified to alternatively include belt 40 of Rezanka. Because Smith fails to recognize that appropriately positioning opening 26 with respect to the printzone may allow the use of the airflow to also hold the media against a support in the printzone to allow elimination of a star-wheel or other media hold-down structure, it would not be obvious to eliminate star-wheel 10 from Smith. Any such assertion would appear to be impermissibly selectively picking and choosing parts from different references using Applicant's own patent disclosure as a blueprint. Accordingly, Claims 1, 19, 22, 31, 35, 40, 49 and 59, as amended, overcome the rejection based upon Smith in view of Rezanka.

B. Claim 8.

Claim 8 depends from Claim 1 and further recites that the airflow is provided from an elongate vent having a length dimension less than a width of the printzone.

Smith and Rezanka fail to disclose or suggest the method of Claim 1, wherein airflow is provided from an elongate vent having a length dimension less than a width of the printzone. In rejecting Claim 8, the Office Action refers to Figure 1, reference 32. However, with respect to Claim 4, the Office Action also asserts that Smith discloses an elongate vent having a length dimension substantially coincident with a width of the printzone. Smith appears to only disclose a single elongate vent. The single elongate vent disclosed by Smith cannot be both substantially coincident with a width of the printzone and less than a width of the printzone. Accordingly, Smith appears to fail to disclose the airflow provided by an elongate vent having a

length dimension less than a width of the printzone. Rezanka does not disclose a vent. Thus, Claim 8 overcomes the rejection based upon Smith for this additional reason.

C. Claim 10.

Claim 10 depends from Claim 1 and recites that the airflow carries heat energy take from a heat source otherwise producing waste heat energy (intervening Claim 9) and that the waste heat energy originates from electronic control circuit components.

Smith and Rezanka fail to disclose waste heat energy originating from electronic control circuitry components being utilized to heat airflow that is directed at the printed upon surface. In contrast, Smith merely discloses heating element 30. Once again, no where does Smith disclose or even suggest that heating element 30 comprises electronic control circuit components. In rejecting Claim 10, the Office Action refers to Figure 6, reference 86 and column 5, lines 53-63 of Smith. However, the embodiment shown in Figure 6 still relies upon a heating element 30. In particular, Smith specifically states "a signal from the thermostat 82 is transmitted to a sensing and regulating logic 84, well known to those skilled in the art, which senses the temperature to regulate the power source 86, which in turn appropriately adjusts the energy and as a consequence, the temperature of heating element 30." (Col. 5, lines 50-55). No where does Smith disclose or suggest that waste heat energy from sensing and regulating logic 84 is used to heat the airflow of Smith. The assertion by the Office Action that the "claim naturally suggested" is erroneous and without support. Thus, Claim 10 overcomes the rejection for this additional reason.

D. Claim 11.

Claim 11 depends from Claim 1 and further recites that the airflow carries heat energy taken from a heat source otherwise producing waste heat energy

(intervening Claim 9) and that the waste heat energy originates from motor components.

Smith and Rezanka fail to disclose a method wherein waste heat energy from motor components is used to heat airflow that is directed to a printed upon face of media. Once again, Smith specifically requires the use of a heating element 30. No where does Smith disclose or suggest that waste heat from its motor is used to heat the airflow of Smith. In rejecting Claim 11, the Office Action refers to column 5, lines 41-46 of Smith. However, such lines merely state that:

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No where does this recited portion of Smith disclose or suggest that waste heat energy from the pole motor is used to heat the air being directed at the print surface by Smith. Accordingly, Claim 11 overcomes the rejection for this additional reason.

VI. Rejection of Claims 6-7, 20-21, 29-30 and 32-33 Under 35 U.S.C. § 103(a) Based Upon Smith, Rezanka and Martinengo.

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Claims 6-7, 20-21 and 32-33 depend from Claims 1, 19 and 31, respectively, and overcome the rejection based upon Smith and Rezanka in view of Martinengo for the same reasons discussed above with respect to Claims 1, 19 and 31. Claims

7, 21, 30 and 33 overcome the rejection based upon Smith, Rezanka and Martinengo for the following additional reasons.

Claims 7, 21, 30 and 33 recite that the resistive elements including electronic control circuit components serving to support operation of an inkjet printer also serve as a heat source for heating air that is directed at print media.

Neither Smith, Rezanka nor Martinengo, alone or in combination, disclose or suggest the use of electrically resistive elements of an electronic control circuit component as a heat source for heating air which is directed at printed upon media. In contrast, Smith merely discloses heating element 30. No where does Smith teach or suggest that heating element 30 comprises an electronic control circuitry component which supports operation of an inkjet printer.

Moreover, Martinengo also fails to disclose a list of elements which include electronic control circuit components serving to support operation of an inkjet printer. In rejecting such claims, the Office Action asserts that Martinengo discloses resistive elements carrying electrical current and refers to column 6, lines 24-27 of Martinengo. However, column 6, lines 24-27 merely refer to a heating element of electrically resistive material disposed on a plate. Martinengo fails to disclose that such electrically resistive material is provided as part of or includes electronic control circuit components serving also to support operation of an inkjet printer. At most, the hypothetical combination of Smith, Rezanka and Martinengo would result in heating element 30 including the electrical resistive elements disclosed by Martinengo. The combination would not result in the sensing and regulating logic 84 of Smith being used to heat air serving as a heat source for heating air directed at media 2. Thus, Claims 7, 21, 30 and 33 overcome the rejection based on Smith and Martinengo for this additional reason.

VII. Added Claims.

With this response, Claims 63-66 are added. Claims 63-66 are believed to be patentably distinct over the prior art of record.

A. Claims 63-65.

Added Claim 63 depends from Claim 1 and further recites that the media is passed through the printzone relative to the support apparatus which is stationary. Added Claim 64 depends from Claim 5 and further recites that the airflow carrying heat is directed at the first surface after the first surface has passed through the printzone and that the airflow preheats media prior to the media passing through the printzone. Added Claim 65 depends from Claim 64 and further recites that the airflow carrying heat energy preheats media while the media is in a feed tray. Support for the added claims is found in Figure 4 which illustrates media being moved relative to an underlying support surface and on page 8, lines 33 and 34, which describe the preheating of the media. No new matter is believed to have been added. The prior art of record, including Smith, Rezanka and Martinengo, fail to disclose the subject matter of added Claims 63-65. Accordingly, Claims 63-65 are presented for consideration and allowance.

B. Claim 66.

Paragraph 24 of the Office Action indicated that Claim 18 would be allowable if rewritten in independent form including the limitations of the base claim and any intervening claims. In response, Claim 18 is rewritten as added Claim 66 and incorporates the limitation of former base Claim 1. Thus, Claim 66 is presented for consideration and allowance.

VIII. Conclusion.

After amending the claims as set forth above, claims 1-57 and 59-66 are now pending in this application.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 08-2025. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 08-2025. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 08-2025.

Respectfully submitted,

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FOLEY & LARDNER LLP
Customer Number: 22879
Telephone: (414) 297-5710
Facsimile: (414) 297-4900

By Todd A. Rathe

Todd A. Rathe
Attorney for Applicant
Registration No. 38,276